

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2004/012279

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7 C07F9/6568

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, BEILSTEIN Data, CHEM ABS Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 03/084971 A (DEGUSSA) 16 October 2003 (2003-10-16) page 13 – page 15	1-13
Y	& DE 103 09 356 A (DEGUSSA) 20 November 2003 (2003-11-20) cited in the application	1-13
Y	WO 91/17998 A (DU PONT) 28 November 1991 (1991-11-28) Scheme 1	1-13
Y	& EP 0 528 865 A (DU PONT) 3 March 1993 (1993-03-03) cited in the application	1-13
A	WO 99/24444 A (CHIROTECH TECHNOLOGY LTD) 20 May 1999 (1999-05-20) page 2	1-13 -/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the International filing date
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- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

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- \*&\* document member of the same patent family

Date of the actual completion of the International search

3 February 2005

Date of mailing of the international search report

18/02/2005

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	& EP 1 028 967 A (CHIROTECH TECHNOLOGY LTD) 23 August 2000 (2000-08-23) cited in the application -----	1-13
A	PILKINGTON C J ET AL: "Expanding the Family of Phospholane-Based Ligands: 1,2-Bis(2,5-diphenylphospholano)ethane" ORGANIC LETTERS, ACS, WASHINGTON, DC, US, vol. 5, no. 8, 17 April 2003 (2003-04-17), pages 1273-1275, XP002301264 ISSN: 1523-7060 cited in the application Scheme 1 -----	1-13
Y	HOLZ J ET AL: "Synthesis of a New Chiral Bisphospholane Ligand for the Rh(I)-Catalyzed Enantioselective Hydrogenation of Isomeric beta-Acylamido Acrylates" JOURNAL OF ORGANIC CHEMISTRY, AMERICAN CHEMICAL SOCIETY. EASTON, US, vol. 68, no. 5, 12 February 2003 (2003-02-12), pages 1701-1707, XP002244188 ISSN: 0022-3263 cited in the application Scheme 2 -----	1-13
Y	BURK M J: "New chiral phospholanes; synthesis, characterization, and use in asymmetric hydrogenation reactions" TETRAHEDRON: ASYMMETRY, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 2, no. 7, 1991, pages 569-592, XP002146730 ISSN: 0957-4166 cited in the application Schemes I & III -----	1-13
Y	BLOOMFIELD P R ET AL: "Direct preparation of phenylphosphine dilithium" CHEMISTRY AND INDUSTRY, 25 April 1959 (1959-04-25), pages 541-542, XP009005175 ISSN: 0009-3068 the whole document -----	1-13
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Y	<p>YAN Y-Y ET AL: "Highly Flexible Synthetic Routes to Functionalized Phospholanes from Carbohydrates"  JOURNAL OF ORGANIC CHEMISTRY, AMERICAN CHEMICAL SOCIETY. EASTON, US,  vol. 65, 11 February 2000 (2000-02-11),  pages 900-906, XP002233658  ISSN: 0022-3263  Scheme 3</p> <p>-----</p>	1-13
Y	<p>NANDI M ET AL: "Synergistic effects of hemilabile coordination and counterions in homogeneous catalysis: new turnable monophosphine ligands for hydrovinylation reactions"  JOURNAL OF THE AMERICAN CHEMICAL SOCIETY,  vol. 121, no. 42,  27 October 1999 (1999-10-27), pages 9899-9900, XP002316158  ISSN: 0002-7863  Scheme I</p> <p>-----</p>	1-13
Y	<p>BRAUER D J ET AL: "Novel P,N ligands derived from (R)- and (S)-1-phenylethylamine with (2R,5R)-2,5-dimethylphospholanyl groups (DuPHAMIN) for asymmetric catalysis"  EUROPEAN JOURNAL OF INORGANIC CHEMISTRY,  no. 9, May 2003 (2003-05), pages 1748-1755, XP002316159  ISSN: 1434-1948  Scheme 1, conversion of compound 4 to 5</p> <p>-----</p>	1-13
Y	<p>LI W ET AL: "Synthesis of chiral hydroxyl phospholanes from D-mannitol and their use in asymmetric catalytic reactions"  JOURNAL OF ORGANIC CHEMISTRY,  vol. 65, no. 11, 2 June 2000 (2000-06-02),  pages 3489-3496, XP002316160  ISSN: 0022-3263  Scheme I</p> <p>-----</p>	1-13

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